

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of)	
)	
Inquiry Concerning the Deployment of)	
Advanced Telecommunications Capability to)	GN Docket No. 07-45
All Americans in a Reasonable and Timely)	
Fashion, and Possible Steps to Accelerate)	
Such Deployment Pursuant to Section 706 of)	
the Telecommunications Act of 1996)	

EMBARQ COMMENTS ON THE FIFTH NOTICE OF INQUIRY

Embarq is the nation's fourth largest incumbent local exchange carrier (ILEC), and it provides service in 18 states. Embarq's service areas include a broad range of geographies from metropolitan markets, such as Las Vegas, Nevada, to rural markets, such as Pretty Prairie, Kansas and Possum Kingdom, Texas. Embarq is classified as a rural carrier under the standard set forth in the Communications Act in 17 of the 18 states where it provides service (Embarq does not qualify as a rural carrier in Nevada). Accordingly, Embarq has considerable experience with broadband deployment, particularly in rural areas where the challenges are greater.

Embarq's experience is instructive on the challenges of serving rural America as the carrier of last resort without receiving substantial universal service support. In these Comments Embarq explains that: (1) it has deployed and is deploying broadband in a reasonable and timely fashion; (2) there are significant impediments to full broadband deployment, particularly in rural America; (3) the Commission and Congress can accelerate and extend broadband deployment with targeted support; and (4) Americans will benefit from widespread broadband deployment.

The Commission can report that the United States should do more to promote broadband deployment, as Chairman Martin stated on the release of the Notice of Inquiry. Broadband services are too important to our economy and national defense to settle for 80% availability.

Therefore, the Commission and Congress should adopt policies that will facilitate and promote further broadband deployment, most notably by overcoming the challenges to rural network deployment. The most profitable avenue for such promotion is likely to be extending universal service support for the underlying telecommunications networks upon which broadband services will rely in sparsely-populated, high-cost rural areas.

These Comments and, more than likely, the full record in this proceeding should lead the Commission to conclude that: (a) more densely populated areas have greater broadband deployment than less densely-populated areas; and (b) high-cost areas that have received adequate explicit support for telecommunications networks have greater broadband deployment than high-cost areas that have not been supported adequately. The fundamental broadband problem, therefore, will be revealed to be one of encouraging and supporting broadband network investment in those high-cost areas that have been deprived of adequate universal service support. This lack of support has principally been the result of flawed reliance on study-area averaging to identify the areas to be supported, as will be explained below.

**I. EMBARQ HAS DEPLOYED AND IS DEPLOYING BROADBAND
IN A REASONABLE AND TIMELY FASHION**

Since Embarq introduced high-speed Internet access service in 1999, the company has successfully grown its high-speed Internet base to over 1 million subscribers at December 31, 2006, which represents approximately 19% penetration of its capable access lines.¹ At that time, Embarq's high-speed Internet services were available to almost 80% of the company's local customers. Embarq's primary high-speed Internet offering features a download speed of up to

¹ Form 10-K for the annual period ended December 31, 2007, at 3 (March 9, 2007).

1.5 Mbps, but the company also offers download speeds ranging from 256 Kbps to 5.0 Mbps.²

Embarq's deployment of broadband is consistent with that of other ILECs, particularly those serving substantial rural areas without receiving explicit universal service support to meet carrier-of-last resort obligations for telecommunications services. Universal service receipts account for a small percentage of Embarq's revenue relative to other rural carriers (less than 4% of Embarq's telecommunications segment revenue comes through such support).

As might be expected, Embarq finds that the customer base, marketing reach, competitors, network infrastructure and economics of the business vary widely among the geographies.³ Metropolitan markets allow for more economical network deployment, along with efficient advertising reach and utilization of personnel, particularly the technician field force. Accordingly, it is easier in those markets to provide widely available high-speed Internet coverage and speeds. Embarq's rural territories include smaller towns and less densely populated areas, where there are greater challenges to broadband deployment. Despite those challenges, Embarq provides high-speed Internet service in many of its small town markets.

In fact, Embarq has been growing its broadband customer base rapidly, albeit from a smaller base and slower start than ILECs with more favorable conditions such as more metropolitan areas, with their lower costs, or more explicit universal service support for the higher-cost rural areas. Embarq recently reported that, as of March 31, 2007, the company had achieved a 42.1% increase in high-speed Internet subscribers as compared to the same period in 2006.⁴ Simplified and more attractive offers including fixed monthly pricing guaranteed not to increase for as long as the customer has the same service offering, have been successful.

² *Id.* at 6.

³ *Id.*

⁴ Form 10-Q for the quarterly period ended March 31, 2007, at 14 (May 2, 2007)

Embarq's broadband deployment, like that of other ILECs, often reaches further into rural areas than does that of other broadband service providers, except for those delivering service using satellite distribution systems. Embarq and other ILECs have deployed broadband at a pace consistent with other service deployments on their nearly ubiquitous networks. Accordingly, while the Commission can and should do much more to facilitate broadband deployment more ubiquitously, the Commission may find that broadband deployment has met the test established by the Telecommunications Act and interpreted by the Commission in prior Section 706 Reports. Specifically, the Commission may affirmatively answer the section 706 question "whether advanced telecommunications capability is being deployed to all Americans in a reasonable and timely fashion."⁵

II. THERE ARE SIGNIFICANT IMPEDIMENTS TO FULL BROADBAND DEPLOYMENT, PARTICULARLY IN RURAL AMERICA

The cost of deploying and supporting broadband networks varies significantly depending on population density, the distance over which infrastructure must be deployed, and topography.⁶ First, a large part of the cost of the network is shared and subject to significant economies of density and/or scale. As the Commission has noted repeatedly, "a lower population density generally indicates a higher cost area."⁷ The National Exchange Carriers Association ("NECA") has estimated that as of 2000, the average household density in exchanges served by rural carriers was 5.95 households per square mile, whereas exchanges served by non-rural LECs had

⁵ 47 U.S.C. § 157(b) nt.

⁶ This is true for all technologies, although the actual investments needed and the relative efficiencies of different technologies may differ from place to place.

⁷ *Federal-State Joint Board on Universal Service; North Carolina RSA 3 Cellular Telephone Company; Petition for Designation as an Eligible Telecommunications Carrier in the State of North Carolina*, CC Docket No. 96-45, Order, __ FCC Rcd __ ¶ 23 (rel. Aug. 14, 2006).

an average household density almost ten times as high, at 52.34 households per square mile.⁸

These distinctions result in significant variation in the cost of deploying facilities in rural and other high-cost areas, on the one hand, and most cities and suburban areas, on the other.

Embarq serves many rural areas, but the cost problems are often masked from universal service support mechanisms because the need for support is calculated based on study areas averages. Embarq often serves both metropolitan and rural areas within the same study areas, which drives down average costs. It does not ameliorate the cost of deploying telecommunications services or broadband in rural areas, however, because competition in metropolitan areas forces prices and revenues to reflect the lower average costs. Accordingly, study area averaging is flawed as a methodology for calculating the need for high-cost support.

As in other networked industries, the fixed costs associated with the provision of broadband are generally high in comparison to the incremental (marginal) costs. This means that in areas where there are fewer consumers, each customer must bear a higher portion of the network's fixed cost. Accordingly, the Government Accountability Office ("GAO") found that "[t]he most frequently cited cost factor affecting broadband deployment was the population density of a market," and that "the cost of building a broadband infrastructure in areas where people live farther apart is much higher than building infrastructure to serve the same number of people in a more urban setting."⁹

Second, sparsely settled areas will also result in higher costs because facilities must be constructed over far longer distances to reach end users. The distance between end users and the need to aggregate a critical mass of traffic in a switch together often necessitate the use of

⁸ See Victor Glass, *NECA Rural Broadband Cost Study: Summary of Results* at 6 (June 21, 2000) ("NECA Study").

⁹ GAO, *Broadband Deployment Is Extensive throughout the United States, but It Is Difficult to Assess the Extent of Deployment Gaps in Rural Areas* at 19 (May 2006) ("GAO Report").

particularly long loops, increasing costs dramatically. Accordingly, the Commission has stated that “for universal service purposes ... cost differences caused by differing loop lengths are the most significant cost factor.”¹⁰

Finally, the topography of an area can also make it difficult to provide affordable service by making it more costly to deploy networks (whether wired or wireless), as the Commission has also noted.¹¹ Accordingly, the GAO found that “terrain was also frequently cited as a factor affecting broadband deployment decisions,” because “infrastructure build-out can be difficult in mountainous and forested areas because these areas may be difficult to reach or difficult on which to deploy the required equipment.”¹²

Broadband entry is particularly likely where new technology permits owners of formerly “single use” networks, such as LECs to make investments converting their networks into platforms for a range of voice, data, and video services without having to deploy a new network in its entirety. This allows firms to leverage their assets to enter related markets by reducing entry costs, which can accelerate the pace and scale of deployment. Therefore, regulations that deny existing networks access to particular markets or otherwise limit the potential revenues to be gained from serving a market will curtail network construction.¹³ Similarly, failing to support the underlying voice network in truly high-cost areas will impair broadband deployment.

¹⁰ *Federal-State Joint Board on Universal Service (Forward-Looking Mechanism for High Cost Support for Non-Rural LECs)*, CC Docket No. 96-45, Fifth Report & Order, 13 FCC Rcd 21,323, 21,355 ¶ 75 (1998)

¹¹ *See, e.g., Access Charge Reform*, 11 FCC Rcd 21354, 21370 ¶ 28 (1997).

¹² *GAO Report* at 19. Topographical concerns also impact the costs of terrestrial wireless providers and hinder the use of satellite communications. *Id.*

¹³ *See, e.g., G.S. Ford, T.M. Koutsy and L.J. Spiwak, Competition after Unbundling: Entry, Industry Structure and Convergence*, Phoenix Center Policy Paper No. 21, (<http://www.phoenix-center.org/pcpp/PCPP21Final.pdf>) (July 2005).

III. THE COMMISSION AND CONGRESS CAN ACCELERATE AND EXTEND BROADBAND DEPLOYMENT WITH TARGETED SUPPORT

Embarq's successes in deploying broadband have been facilitated by many of the same factors that have promoted broadband deployment generally, particularly by telecommunications service providers. Broadband deployment has benefited from a combination of pro-investment Commission and state policies, technological evolution, and market developments such as increasing customer demand for high-speed services. The Commission commendably has followed the public interest, and the pro-competitive mandates of Section 706, to remove regulatory constraints in order to "give incumbent LECs incentives to deploy advanced facilities allowing them to roll out their own triple play of services as cable competitors roll out theirs."¹⁴ Under Chairman Martin's leadership, the Commission has built on this legacy by, among other things, taking significant steps to remove barriers to video entry.¹⁵

The Commission can and should do substantially more to facilitate broadband deployment, however. In particular, the Commission must identify and direct support to the underlying networks that serve high-cost areas where broadband deployment is not economically feasible when left to market forces. The Chairman has clearly explained that such support should focus on a single network rather than on the separate policy of promoting competition. Moreover, serious analysis of the incremental cost of deploying broadband will reveal that it is often the legacy telecommunications network that offers the most economical platform that requires the least additional support for broadband deployment in uneconomic, high-cost areas.

¹⁴ *Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers; Implementation of the Local Competition Provisions of the Telecommunications Act of 1996; Deployment of Wireline Services Offering Advanced Telecommunications Capability*, Order on Reconsideration, 19 FCC Rcd 20,293, 20,298 ¶ 13 & n.45 (2004).

¹⁵ *See, e.g., Implementation of Section 621(a)(1) of the Cable Communications Policy Act of 1984 as amended by the Cable Television Consumer Protection and Competition Act of 1992*, MB Docket No. 05-311, Report & Order, 22 FCC Rcd 5101 (2007)(removing franchise barriers).

The Commission can, therefore, best promote broadband deployment through fundamental universal service reform creating adequate support for underlying telecommunications networks.

Historically, support for universal service has been generated through carrier-of-last-resort obligations and implicit subsidies.¹⁶ For the most part, the ILEC in each area of the country has been required to provide service at a regulated rate to any requesting customer. When the service is being sold below cost, the ILEC has been required to look to its other customers for compensation through rate averaging across high and low-cost areas. Where rate averaging would not work, even in a monopoly environment, explicit universal service support mechanisms evolved to compensate carriers for providing service to customers in high-cost areas at rates that do not cover the cost of service.¹⁷

Competition has grown rapidly in markets served by ILECs since 1996, however, making the implicit subsidies for universal service tenuous and, ultimately, unsustainable. Today, rate averaging does not produce enough contribution margin to cover the cost of service in less densely-populated areas. In fact, the practice is harming universal service by creating price umbrellas under which competitors not subject to carrier of last resort obligations can target the customers in low-cost areas. Consequently, when regulators force ILECs to engage in rate averaging they facilitate economically inefficient pricing and uneconomic network bypass.

Therefore, the Commission and Congress should focus their energies in the first instance on conducting a granular study identifying the truly high-cost areas to serve. This would serve as an effective tool for identifying areas where it is uneconomic for the market to deploy broadband.

¹⁶ E.g., Jonathan E. Nuechterlein & Philip J. Weiser, *Digital Crossroads* 333-56 (2004).

¹⁷ See *Federal-State Joint Board on Universal Service*, CC Docket No. 96-45, Report & Order, 12 FCC Rcd 8776 (1997) (*Universal Service First Report & Order*).

The Commission's long-stated goal of advancing broadband deployment—whether as a supported service or not—requires a comprehensive understanding of the geographic hurdles (density, distance, absence of critical mass of consumers) and incremental investment needs that currently providers face as they bring advanced services to the most rural, high-cost areas.

IV. WIDESPREAD BROADBAND DEPLOYMENT BENEFITS ALL AMERICANS

Broadband infrastructure supports the nation's economic health. The universal availability of such infrastructure is the connective tissue that binds our national resources to our market economy. Many industries, such as agriculture, mining, manufacturing, and tourism would produce less, and would be less viable in many places, without ubiquitous, high-quality, and affordable broadband services. Similarly, businesses and individuals in high-cost areas would be unable to participate as fully in our economy as producers and consumers of goods and services. The universal availability of critical infrastructure facilitates and supports innovation and investment in the human resources that are essential for our economic future. As information processing becomes an increasingly central aspect of our economy, we simply cannot afford to leave parts of our country disconnected.

Broadband infrastructure also supports homeland security. The goal of protecting our society is not achievable if those living in high-cost areas are disconnected from society as a whole. It is impossible to protect our country against terrorism or criminal activity if there are substantial land areas that are isolated from our critical road, electrical, and communications infrastructures. Similarly, ubiquitous availability of high-quality, affordable broadband services facilitates our local and national responses to natural disasters, such as hurricanes. As Chairman Martin wrote last year when announcing the creation of the Commission's Homeland Security Bureau, "[t]he events of September 11th, 2001 and last year's Hurricane season underscored

America's reliance on an effective national telecommunications infrastructure.”¹⁸

Finally, ubiquitous broadband offerings benefit everybody, including those living in low-cost regions, because they expand contact with others who might otherwise remain unconnected. As economists note, in fields subject to “network effects,” goods or services are more valuable to each customer when other customers also use them.¹⁹ The more people and places we can call, the more we can rely on broadband and the more valuable the network becomes for each of us.

V. CONCLUSION

In sum: (1) Embarq has deployed and is deploying broadband in a reasonable and timely fashion; (2) there are significant impediments to full broadband deployment, particularly in rural America; (3) the Commission and Congress can accelerate and extend broadband deployment with targeted support; and (4) Americans will benefit from widespread broadband deployment.

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¹⁸ *Establishment of the Public Safety and Homeland Security Bureau And Other Organizational Changes*, Order, __ FCC Rcd ____, FCC 06-35 (separate statement of Chairman Kevin J. Martin) (Sep. 25, 2006).

¹⁹ *E.g.*, Joseph Farrell & Garth Saloner, *Standardization, Compatibility, and Innovation*, 16 RAND Journal of Economics 70 (Spring 1985); Michael L. Katz & Carl Shapiro, *Network Externalities, Competition, and Compatibility*, 75 American Economic Review 424 (Jun. 1985).